What is claimed is:

1. A rotary shaft balancer mechanism for reducing rotary moment acting on a rotary shaft rotatably supported by a shaft supporting member from one or more members supported by the rotary shaft, comprising:

a gas spring for applying to the rotary shaft a balancing rotary moment that at least partly cancels the rotary moment;

a first coupler that rotatably couples one end of the gas spring to a stationary member on the shaft supporting member; and

a second coupler that rotatably couples the other end of the gas spring either to an end of the rotary shaft or to a rotary member fixed to the end of the rotary shaft at a position offset to an axis of the rotary shaft.

2. The rotary shaft balancer mechanism according to claim 1 characterized by the fact that the axis of the rotary shaft, the rotary axis of the first coupler, and the rotary axis of the second coupler are parallel.

3. The rotary shaft balancer mechanism according to claim 2 characterized by the fact that the second coupler is provided with a coupling shaft protruding from the end of the rotary shaft or the rotary member in parallel with the axial of the rotary shaft and the other end of the gas spring is rotatably coupled by the rotary shaft or by the rotary member via the coupling shaft.

4. The rotary shaft balancer mechanism according to any of claims 1 to 3 characterized by the fact that the rotary shaft is a rotary shaft rotatably supporting a table unit provided at a position offset to the axis of the rotary shaft and on which a work is detachably mounted in an indexer.

5. A rotary shaft balancer mechanism for reducing rotary moment acting on a rotary shaft rotatably supported by a shaft supporting member from one or more

members supported by the rotary shaft, comprising:

a gas spring for applying a balancing rotary moment to the rotary shaft that at least partly cancels the rotary moment;

a coupling arm that has the gas spring and is expandable and contractable via the gas spring;

a first coupler that rotatably couples one end of the coupling arm to a stationary member on the shaft supporting member; and

a second coupler that rotatably couples the other end of the coupling arm either to an end of the rotary shaft or to a rotary member fixed to the end of the rotary shaft at a position offset to the axis of the rotary shaft.